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PROJECT SPECIFIC PLAN FOR AREA 9, PHASE III CERTIFICATION SAMPLING ABANDONED OUTFALL LINE – PART ONE

FERNALD CLOSURE PROJECT
FERNALD, OHIO

AUGUST 2004

U.S. DEPARTMENT OF ENERGY

21140-PSP-0003
REVISION 0
FINAL

TABLE OF CONTENTS

APPENDICES

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS AND ABBREVIATIONS

A1PI	Area 1, Phase I
A1PII	Area 1, Phase II
A9PI	Area 9, Phase I
A9PIII	Area 9, Phase III
ASL	analytical support level
BTV	Benchmark Toxicity Value
CDL	Certification Design Letter
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
COC	constituent of concern
CU	certification unit
DOE	U.S. Department of Energy
DQO	Data Quality Objectives
FACTS	Fernald Analytical Computerized Tracking System
FAL	Field Activity Log
FCP	Fernald Closure Project
FRL	final remediation level
GFAA	graphite furnace atomic absorption
GC	gas chromatography
GC/MS	gas chromatography mass spectroscopy
GPC	gas proportional counting
GPS	Global Positioning System
HPLC	high performance liquid chromotography
ICP-AES	inductively coupled plasma atomic emission spectroscopy
ICP/MS	inductively coupled plasma mass spectroscopy
MDL	minimum detection level
mg/kg	milligrams per kilogram
NAD83	North American Datum of 1983
pCi/g	picoCuries per gram
PCB	polychlorinated biphenyl
PSP	project specific plan
QA/QC	Quality Assurance/Quality Control
SCQ	Sitewide CERCLA Quality Assurance Project Plan
DSDP	Demolition Soil and Disposal Project
SED	Sitewide Environmental Database
SEP	Sitewide Excavation Plan
SPL	Sample Processing Laboratory
TAL	Target Analyte List
V/FCN	Variance/Field Change Notice
VOC	volatile organic compound
VSL	validation support level
WAO	Waste Acceptance Organization

1.0 INTRODUCTION

1.1 BACKGROUND AND PURPOSE

Area 9, Phase III (A9PIII) is located offsite and follows the abandoned outfall line from the eastern boundary of the Fernald Closure Project (FCP) to the Great Miami River; however, this certification effort only encompasses the portion of A9PIII – Part One, which extends from the eastern boundary of the Fernald Closure Project (FCP) to State Route 128. Certification of this area only encompasses the soil beneath the abandoned outfall line bedding material. A location map of the entire A9PIII is provided on Figure 1-1, and a location map of A9PIII – Part One is provided on Figure 1-2. The area located off-property to the east of A1PII will be certified to the more stringent off-property FRLs. The purpose of certification is to verify that residual soil constituent of concern (COC) concentrations meet the FRLs.

1.2 SCOPE

This Project Specific Plan (PSP) includes details of certification sampling, analysis and validation that will take place in A9PIII – Part One, which is adjacent to remediated, on-property A1PII. Field activities will be consistent with the Sitewide Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Quality Assurance Project Plan (SCQ) and Section 3.4 of the SEP. The certification sampling program, as discussed in Section 2.0 of this PSP, will be consistent with Data Quality Objectives (DQO) SL-052, Revision 3, which is included as Appendix A of this PSP.

1.3 KEY PROJECT PERSONNEL

Key project personnel responsible for performance of the project are listed in Table 1-1.

TABLE 1-1
KEY PROJECT PERSONNEL

Title	Primary	Alternate
Department of Energy (DOE) Contact	Nina Akgunduz	Johnny Reising
DSDP Project Manager	Jyh-Dong Chiou	Rich Abitz
Characterization Manager	Frank Miller	Rich Abitz
Area 9, Phase III	Greg Lupton	Denise Arico
RTIMP Manager	Brian McDaniel	Dale Seiller
Soil Sampling Manager	Tom Buhrlage	Jim Hey
Surveying Manager	Jim Schwing	Andy Clinton
WAO Contact	Linda Barlow	TBD
Construction Manager	Warren Hooper	Charles Carney
Engineering Lead	Tony Snider	Dave Russell
Laboratory Contact	Heather Medley	Kathy Leslie
Data Validation Contact	Jim Chambers	Andy Sandfoss
Field Data Validation Contact	Dee Dee Edwards	Andy Sandfoss
Data Management Lead	Greg Lupton	Denise Arico
Radiological Control Contact	Corey Fabricante	Mike Schneider
FACTS/SED Database Contact	Kym Lockard	Susan Marsh
Quality Assurance Contact	Reinhard Friske	Darren Wessel
Safety and Health Contact	Gregg Johnson	Jeff Middaugh

FACTS – Fernald Analytical Computerized Tracking System
QA/QC – Quality Assurance/Quality Control
DSDP – Demolition Soil and Disposal Project
SED – Sitewide Environmental Database
WAO – Waste Acceptance Organization

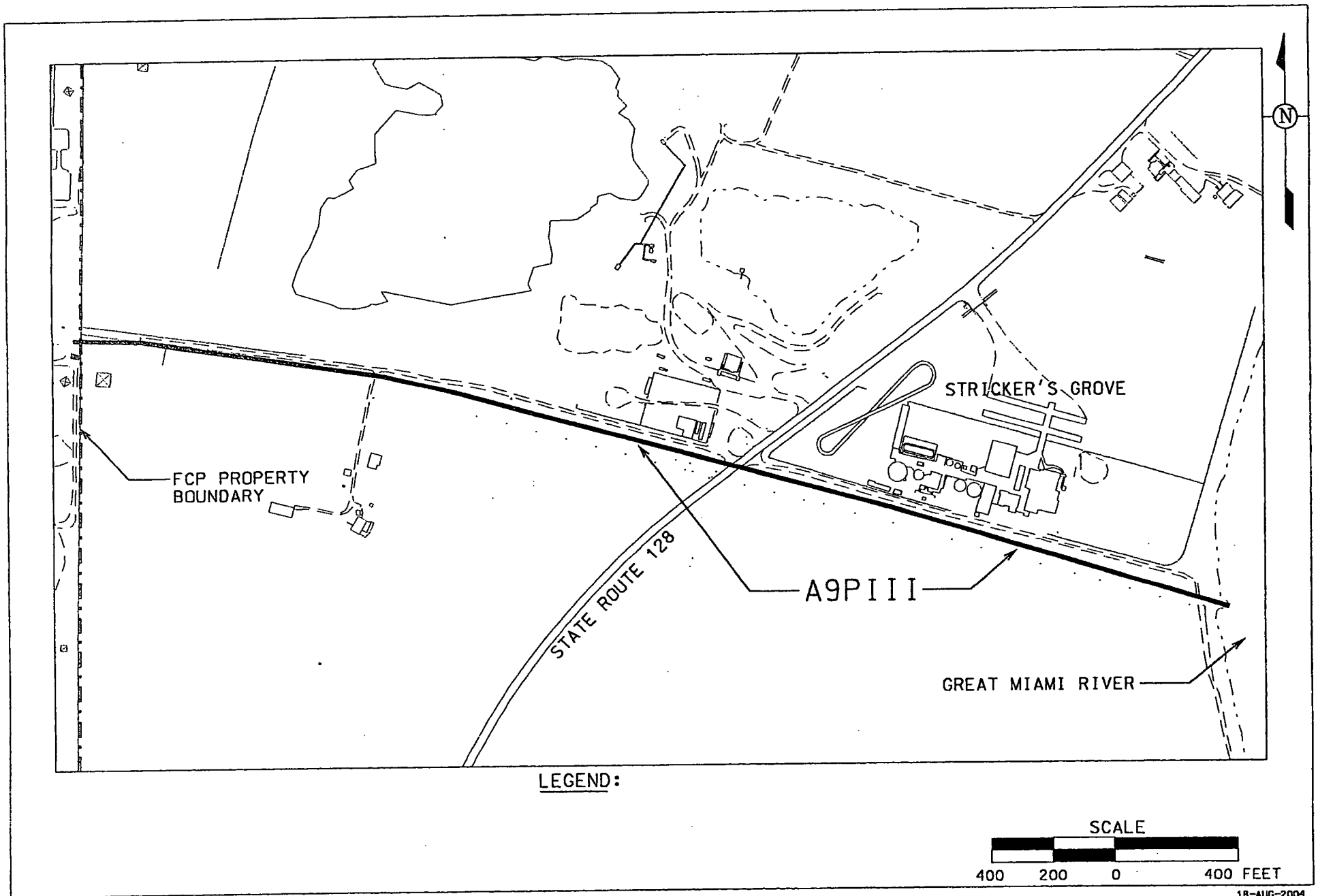

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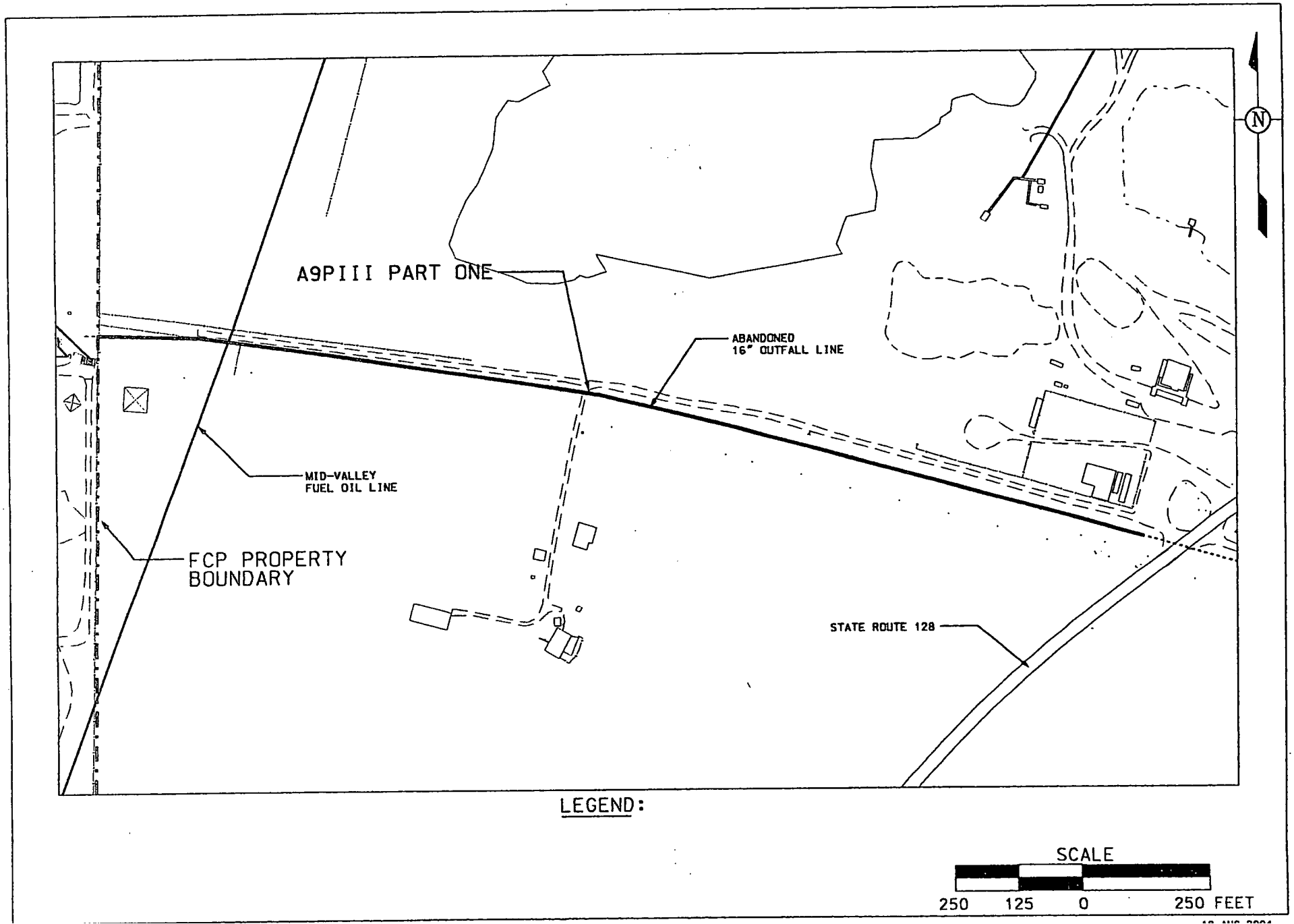
FIGURE 1-1. AREA 9 PHASE III LOCATION MAP


A9PIII PART ONE
ABANDONED
16" OUTFALL LINE
MID-VALLEY
FUEL OIL LINE
FCP PROPERTY
BOUNDARY
STATE ROUTE 128
N
LEGEND:
SCALE
250 125 0 250 FEET

2.0 CERTIFICATION SAMPLING PROGRAM

2.1 CERTIFICATION DESIGN

Details and logic of the certification design are described in the A9PIII Certification Design Letter (CDL). Within A9PIII, four Group 1 CUs certification units (CUs) have been established. Each CU is divided into 16 sub-CUs (17 sub-CUs in CU 1). Within each sub-CU, one certification sample location has been identified. All sample locations were tested against the minimum distance criterion as defined in the SEP within each CU. Certification sampling will consist of sample collection at the 16 selected locations (17 sample locations in CU 1), plus one field duplicate sample within each CU. The sample locations, field duplicate samples, and archive samples are identified in Appendix B.

2.2 SURVEYING

The North American Datum of 1983 (NAD83) State Planar coordinates for each selected sampling location will be surveyed, offset and flagged on the northern excavation fence. Appendix B and Figures 2-1, 2-2, 2-3, 2-4, and 2-5 show the tentative certification sampling locations, all of which meet the minimum distance criterion.

2.3 PHYSICAL SOIL SAMPLE COLLECTION

After the abandoned outfall line piping, bedding material, and approximately six inches of native soil have been removed from the trench, the approximate certification sampling location shall be identified, and the next six inches of undisturbed soil shall be removed from the bottom of the trench and sampled. All samples will be collected from the bucket of the excavator according to procedure SMPL-01, Solids Sampling. At the discretion of the Field Sampling Lead, samples may be collected using various methods specified in SMPL-01, as long as sufficient volume is collected to perform the prescribed analyses. If there is evidence of leakage from the outfall line (e.g. broken, cracked, or disjointed piping), then a biased sample location will be flagged on the fence line, and samples will be collected from the floor and both the north and south sidewalls approximately one foot from the floor of the excavation. If there are any detected results from the volatile organic compounds (VOCs) or technetium-99 samples, then additional samples will be collected using the Geoprobe for the entire CU and the samples will be analyzed for additional Sitewide secondary ASCOCs (identified in Table 3-1).

In order to meet the quality control requirements for duplicate field samples, twice the soil volume will be collected at one location per CU, as identified in Appendix B. The duplicate field samples will be

collected according to procedure SMPL-21, Section 6.5, and will not be homogenized with the original sample. All samples, including duplicate field samples, will be assigned unique sample identification numbers as shown in Appendix B.

If an obstacle prevents sample collection at the specified location, it can be moved according to the following guidelines:

- The distance moved must be as small as possible (less than 3 feet);
- It must remain within the boundary of the same CU and sub-CU, and must still meet the minimum distance criterion;
- If the distance moved is greater than 3 feet, the move must be documented in a Variance/Field Change Notice (V/FCN), considered as significant, which will be approved by the agencies prior to collection.

The Characterization Manager or designee should be contacted when a sample location is moved greater than 3 feet. All final sampling locations will be documented in the A9PIII – Part One Certification Report.

Customer sample numbers and FACTS identification numbers will be assigned to all samples collected. The sample labels will be completed with sample collection information, and technicians will complete a Field Activity Log (FAL), a Sample Collection Log, and a Chain of Custody/Request for Analysis form in the field prior to submittal of the samples. All soil samples from a single CU with like analyses (including field duplicates) will be batched and submitted to the Sample Processing Laboratory (SPL) under one set of Chain of Custody/Request for Analysis forms which will represent one analytical release. Rinsates/container blanks will be listed on a separate Chain of Custody/Request for Analysis form. Based on historical data, precertification scan data and process knowledge, no photoionization detector survey or radiological survey will be necessary. Also, no alpha/beta screens will be required for samples to be shipped off site. The highest alpha/beta result for the area is 268 pCi/g from manhole 181.

Samples will be collected from all 16 sample locations in each CU (17 sample locations in CU 1 and CU 4), including one field duplicate sample. Thirteen samples from each CU (12 plus one field duplicate) will be submitted for analysis with the exception of CU 1 and CU 4, which will have 14 samples (13 plus one field duplicate). The four samples designated as "archive" will be stored in the event they are needed for additional analyses.

2.3.1 Equipment Decontamination

Decontamination is performed to prevent the introduction of contaminants from the sampling equipment to subsequent soil samples. As described in SMPL-01, Field Technicians will ensure that sampling equipment has been decontaminated prior to transport to the field. Decontamination is also necessary in the field if sampling equipment is reused. If an alternate sampling method is used, equipment will be decontaminated between collections of sample intervals, and again after the sampling performed under this PSP is completed. Following decontamination, clean disposable wipes may be used to replace air-drying of the equipment.

2.3.2 Physical Sample Identification

Each soil certification sample will be assigned a unique sample identification number as *A9P3-C#-Location^Analysis-QC,* where:

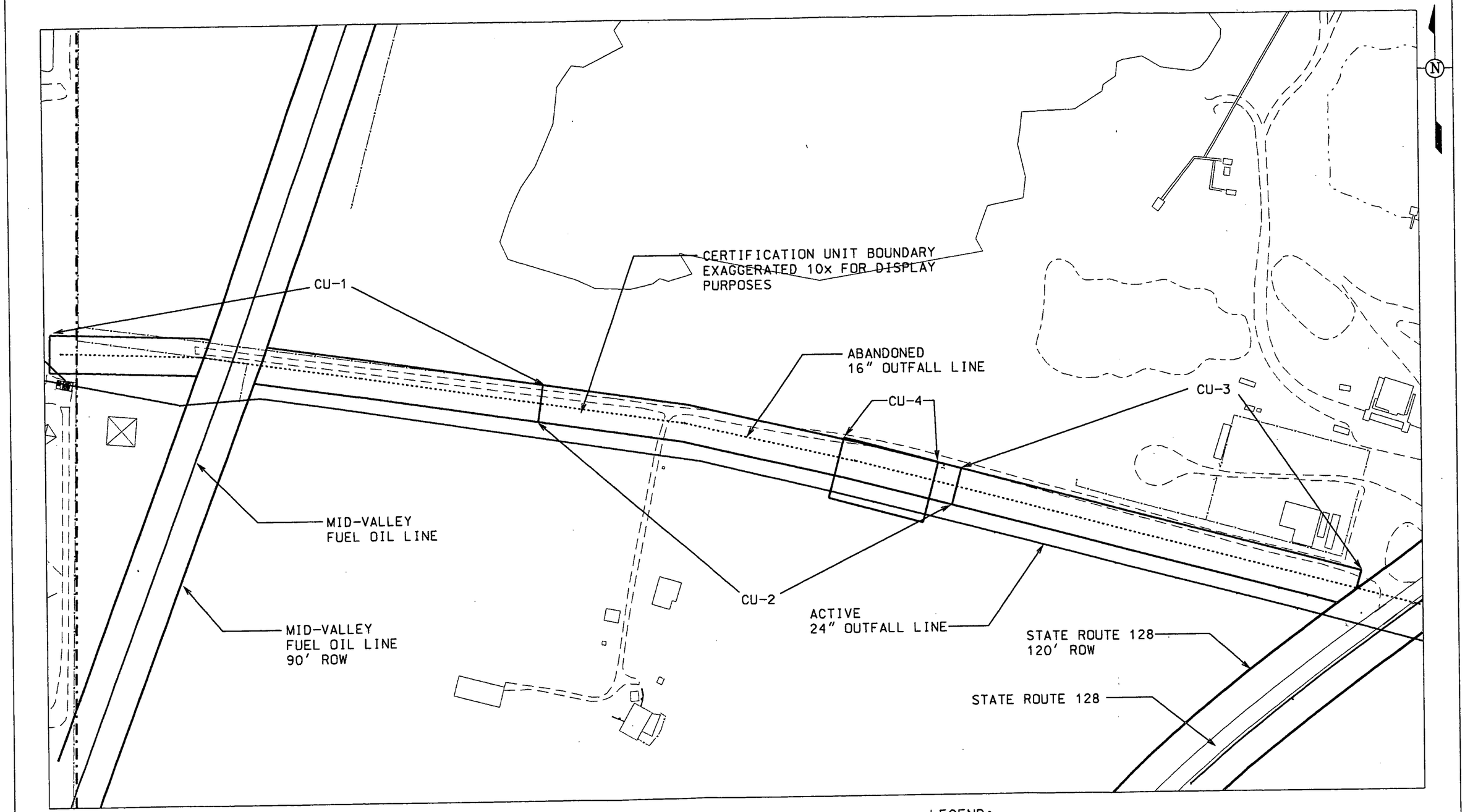
A9P3	=	Sample collected from Remediation A9PIII (Note that the number "3" is used in place of the roman numeral "III" in the ID for data management purposes)
C#	=	Certification sample representing certification unit from which sample was collected (numbered as C01 through C04)
Location	=	Sample Location number within each CU (1 through 16 [17 for CU01 and CU04])
Analysis	=	"R" indicates radiological analysis; "M" indicates metals; "P" indicates PCBs; "S" indicates semi-volatiles; "L" indicates volatiles; and "V" indicates archives
QC	=	Quality control sample, if applicable. A "D" indicates a field duplicate sample; "TB1" indicates the first trip blank collected, and each additional trip blank collected will be consecutively numbered.

For example, a field duplicate sample taken from the 1st sample location from CU 3 for radiological, metals, and PCB analysis would be identified as A9P3-C03-1^RMP-D. A trip blank will be identified as A9P3C-L-TB#, and the analysis code will be added. The first trip blank collected will be identified as A9P3C-L-TB1. An example archive sample collected from the 4th sample location from CU 1 would be identified as A9P3-C01-4^V.

Each bias soil certification sample will be assigned a unique sample identification number as *A9P3-C#-B#N(or C or S)^Analysis-QC*, where:

A9P3	=	Sample collected from Remediation A9PIII (Note that the number "3" is used in place of the roman numeral "III" in the ID for data management purposes)
C#	=	Certification sample representing certification unit from which sample was collected (numbered as C01 through C04)
B#N(or C or S)	=	Sequential Bias Sample Location number within each CU and "N" indicates North, "C" indicates Center, and "S" indicates South
Analysis	=	"R" indicates radiological analysis; "M" indicates metals; "P" indicates PCBs; "S" indicates semi-volatiles; "L" indicates volatiles; and "V" indicates archives
QC	=	Quality control sample, if applicable. A "D" indicates a field duplicate sample; "TB1" indicates the first trip blank collected, and each additional trip blank collected will be consecutively numbered.

For example, the first a bias sample taken from the north wall of the trench of CU 03 for radiological, metals, and PCB analysis would be identified as A9P3-C03-B1N^RMP; from the center of the trench would be identified as A9P3-C03-B1C^RMP; and from the south wall of the trench would be identified as A9P3-C03-B1S^RMP.



LEGEND:

-.-.- FCP BOUNDARY

SCALE

150 75 0 150 FEET

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FIGURE 2-1. AREA 9 PHASE III, PART ONE CERTIFICATION UNITS

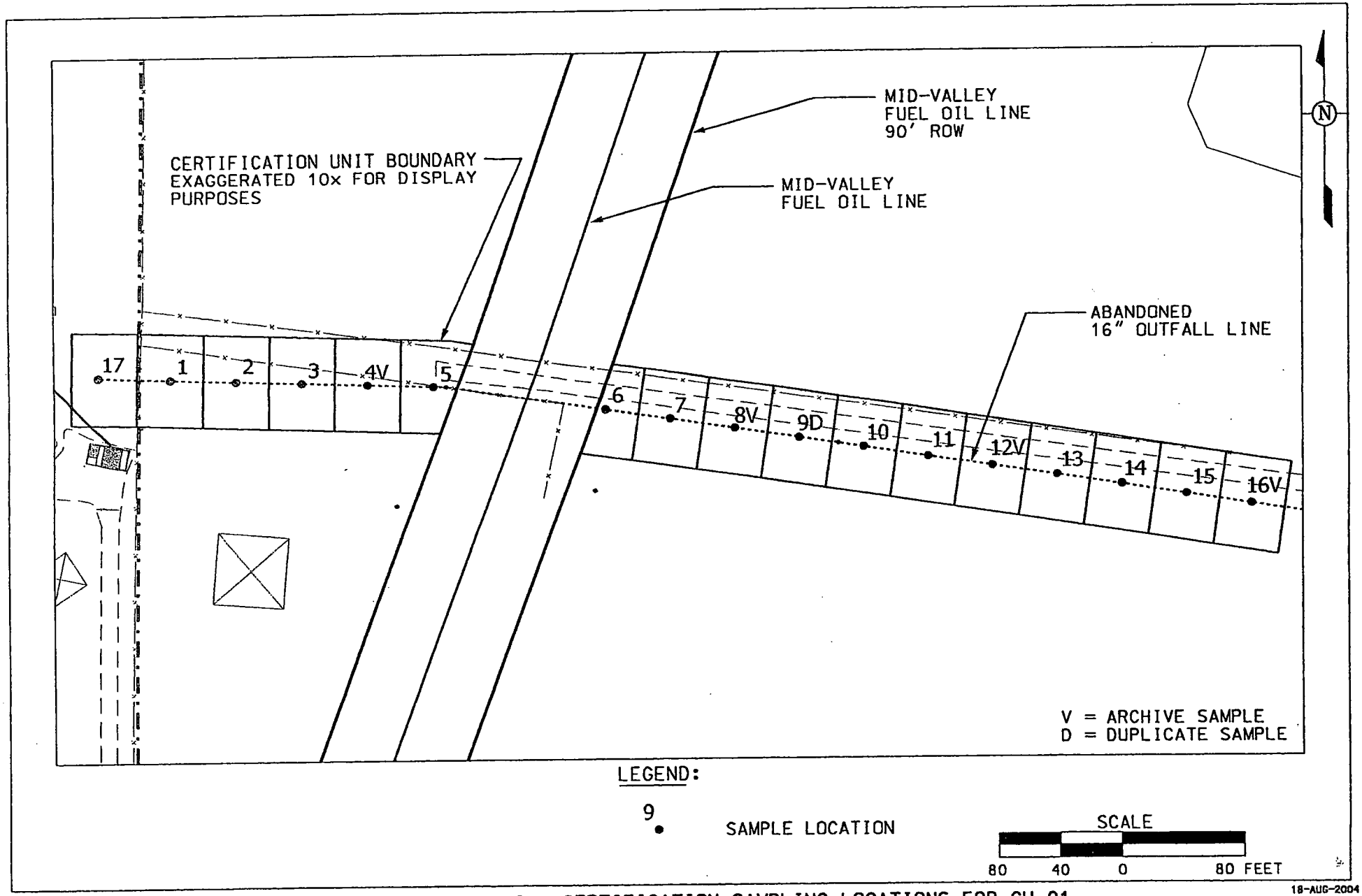

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FIGURE 2-2. CERTIFICATION SAMPLING LOCATIONS FOR CU 01

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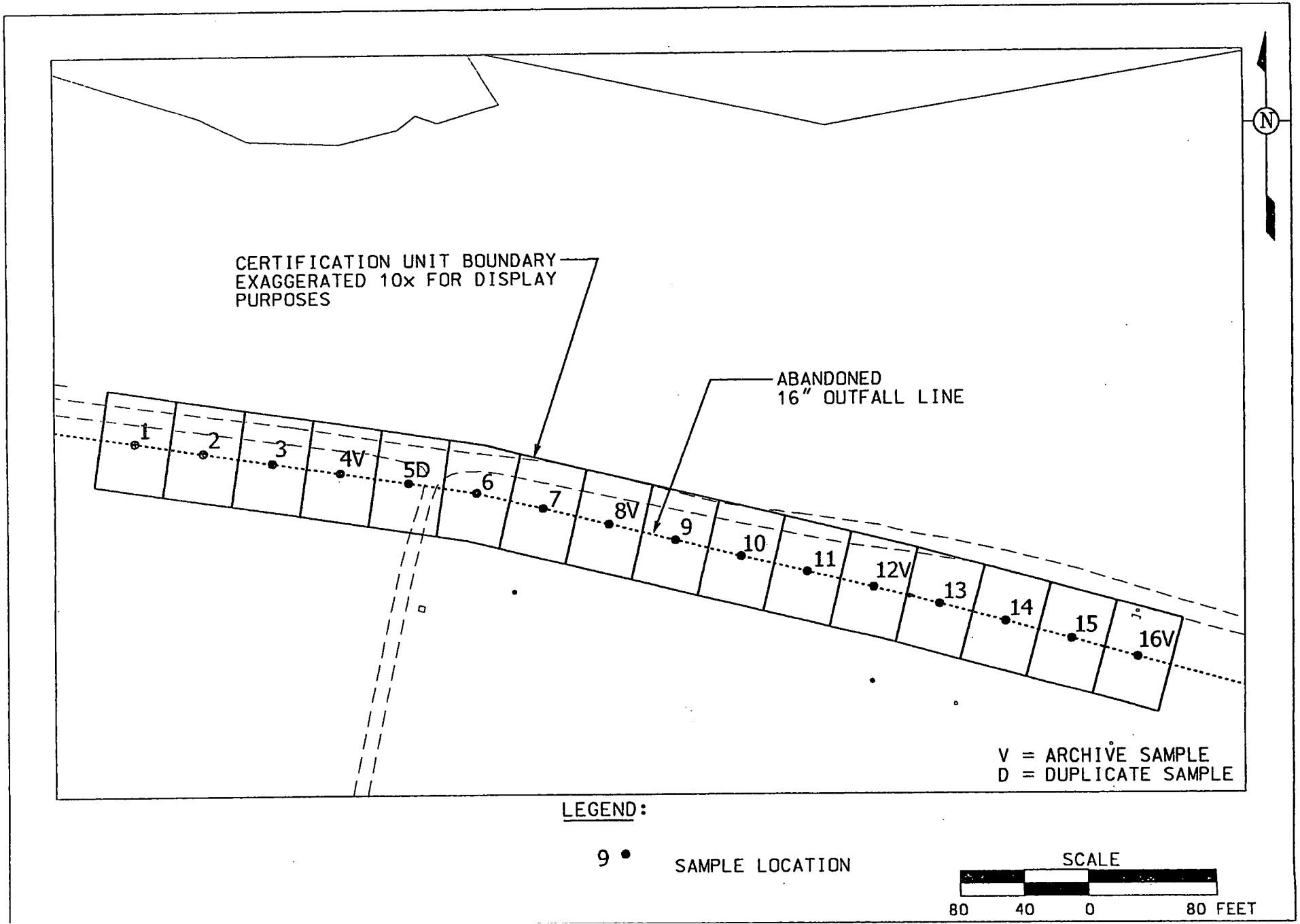
CERTIFICATION UNIT BOUNDARY
EXAGGERATED 10x FOR DISPLAY
PURPOSES
ABANDONED
16" OUTFALL LINE
1
2
3
4V
5D
6
7
8V
9
10
11
12V
13
14
15
16V
V = ARCHIVE SAMPLE
D = DUPLICATE SAMPLE
N
LEGEND:
9 • SAMPLE LOCATION
SCALE
80 40 0 80 FEET

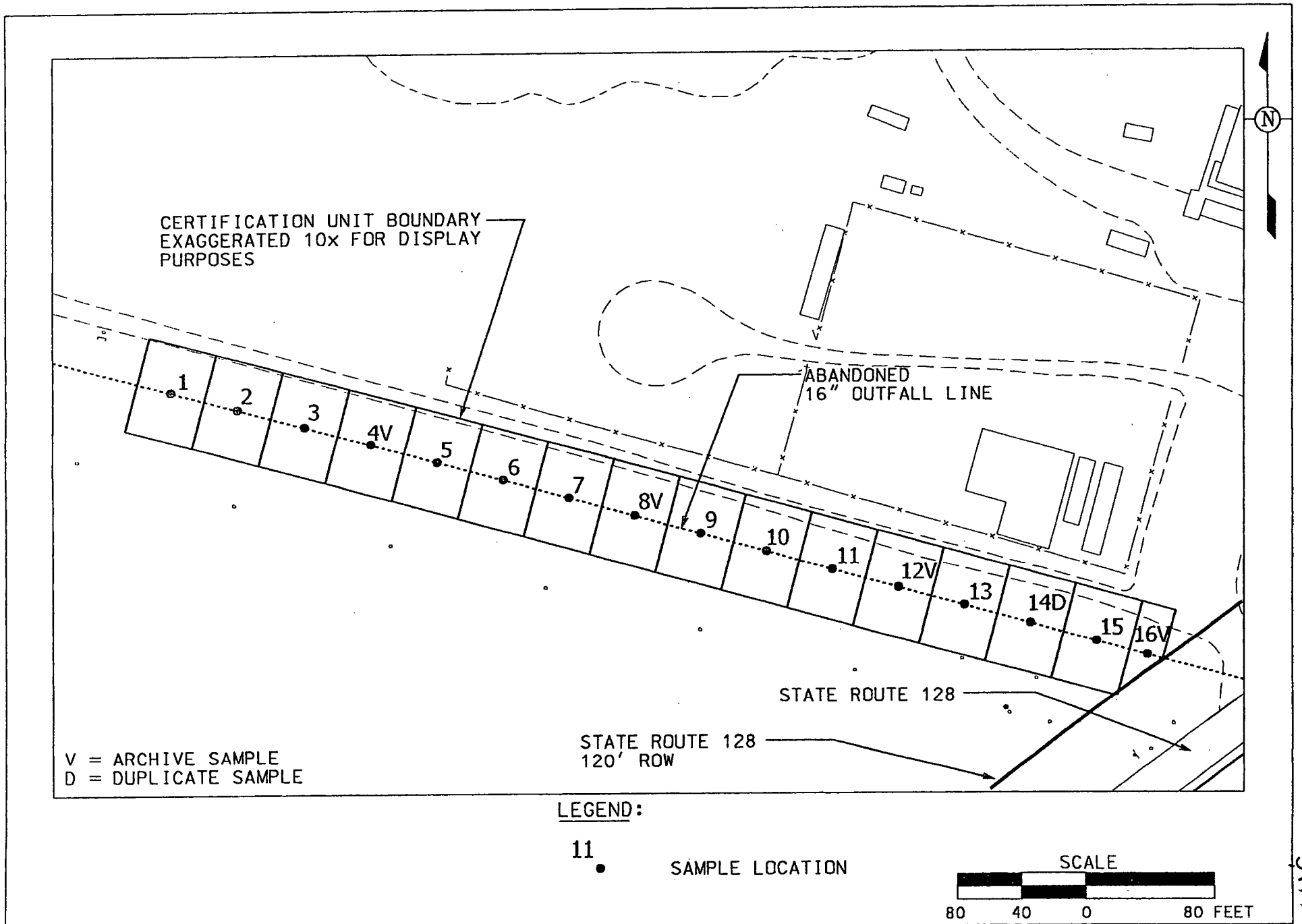

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FIGURE 2-4. CERTIFICATION SAMPLING LOCATIONS FOR CU 03

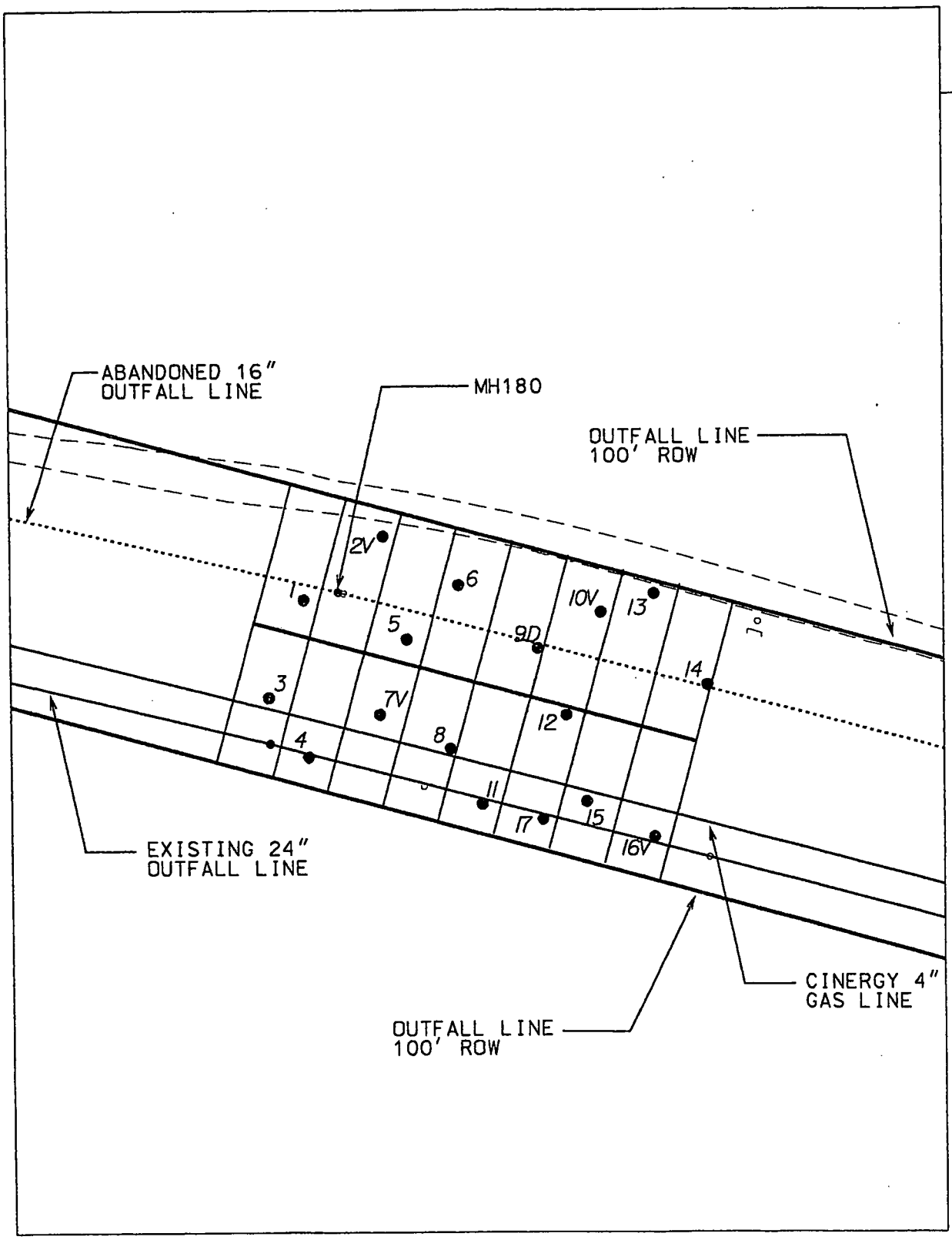

FIGURE 2-5. CERTIFICATION SAMPLING LOCATIONS FOR CU 4

3.0 CERTIFICATION SAMPLE ANALYSIS

All samples will be prepared for shipment to off-site laboratories per procedure 9501 Shipping Samples to Off-site Laboratories. Samples will only be shipped to off-site laboratories that are listed on the Fluor Fernald Approved Laboratories List. The sampling and analytical requirements are listed in Table 3-1.

As soon as the samples arrive at the laboratory where the analysis will take place, all samples should be prepared for analysis, and radiological samples should be sealed to begin the in-growth period for radium analysis. A 30-day turnaround time will be required for all samples submitted for analysis unless otherwise stated.

The Target Analyte Lists (TAL) are shown in Table 3-2. TALs C and E will only be analyzed if there are any detected results from the volatile organic compounds (VOCs) or technetium-99 samples.

TABLE 3-1

SAMPLING AND ANALYTICAL REQUIREMENTS

Analyte	Method	Sample Matrix	ASL	Preserve	Hold Time	Container [b]	Minimum Mass/Volume
Radiological (TAL A)	Gamma Spec, Alpha Spec, Liquid Scintillation or GPC	Solid	D/E[a]	Cool, 4° C	12 months	Glass with Teflon-lined lid	500 g (1500 g)[c]
Metals (TAL B)	ICP-AES or ICP/MS				6 months		
PCBs (TAL B)	GC				14 days		
SVOCs (TAL C)[d]	GC						
VOCs (TAL D)	GC/MS	Solid	D/E[a]	Cool, 4° C	48 hours	3 x 1-Encore Sampler[c] or equivalent plus a 60 ml jar for % moisture	Each full Encore Sampler[c] will hold app. 5 g of soil
VOCs (TAL E)[d]							
VOCs (TAL D)	GC/MS	Liquid (trip blank)	D/E[a]	Cool, 4° C H_2SO_4 pH<2	14 days	3 x 40-ml glass with lined-lined septa	120 ml[c] (no headspace)
VOCs (TAL E)[d]							

[a]Samples will be analyzed according to Analytical Support Level (ASL) D requirements but the minimum detection level may cause some analyses to be considered ASL E.
[b]Sample container types may be changed at the direction of the Field Sampling Lead, as long as the volume requirements, container compatibility requirements, and SCQ requirements are met.
[c]At the direction of the Field Sampling Lead, triple the specified volume must be collected for all samples at one location per CU in order for the contract laboratory to perform the required quality control analysis. The samples shall be identified on the Chain of Custody/Request for Analysis forms as "designated for laboratory QC".
[d]If there are any detected results from the VOCs (TAL D) or technetium-99 samples occur, then these TALs will be analyzed.
ICP-AES – inductively coupled plasma atomic emission spectroscopy
ICP/MS – inductively coupled plasma mass spectroscopy
GC – gas chromatography
GC/MS – gas chromatography mass spectroscopy
GPC – gas proportional counting

TABLE 3-2

TARGET ANALYTE LISTS

21130-PSP-0003-A
(ASL D/E[1])

Analyte	Off-Property FRL	MDL
Total Uranium	50 mg/kg	5 mg/kg
Radium-226	1.5 pCi/g	0.15 pCi/g
Radium-228	1.4 pCi/g	0.14 pCi/g
Thorium-228	1.5 pCi/g	0.15 pCi/g
Thorium-232	1.4 pCi/g	0.14 pCi/g
Cesium-137	0.82 pCi/g	0.082 pCi/g
Technetium-99	1 pCi/g	0.5 pCi/g[2]

21130-PSP-0003-B
(ASL D/E[1])

Analyte	Off-Property FRL (BTV)[3]	MDL
Antimony	0.61 mg/kg	0.2 mg/kg[2]
Arsenic	9.6 mg/kg	0.96 mg/kg
Beryllium	0.62 mg/kg	0.062 mg/kg
Boron	4.0 mg/kg	0.4 mg/kg
Cadmium	0.91 mg/kg	0.091 mg/kg
Hexavalent Chromium	11 mg/kg (0.05 mg/kg)	0.11 mg/kg
Lead	400 mg/kg (200 mg/kg)	20 mg/kg
Molybdenum	13 mg/kg (10 mg/kg)	1 mg/kg
Silver	1.0 mg/kg	0.1 mg/kg
Aroclor-1254	0.04 mg/kg	0.004 mg/kg
Aroclor-1260	0.04 mg/kg	0.004 mg/kg

21130-PSP-0003-C
(ASL D/E[1])

Analyte	Off-Property FRL (BTV)[3]	MDL
Benzo(a)pyrene	0.09 mg/kg	0.05 mg/kg[2]
Benzo(b)fluoranthene	0.16 mg/kg	0.05 mg/kg[2]
Dibenzo(a,h)anthracene	0.0016 mg/kg	best achievable[5]
Dieldrin	0.0088 mg/kg	0.00088 mg/kg
Indeno(1,2,3-cd)pyrene	0.016 mg/kg	best achievable[5]

TABLE 3-2
(Continued)

21130-PSP-0003-D
(ASL D/E[1])

Analyte	Off-Property FRL	MDL
1,1-dichloroethene	0.059 mg/kg	0.0059 mg/kg
1,1,1-trichloroethane	0.19[4] mg/kg	0.0019 mg/kg
Tetrachloroethene	1 mg/kg	0.1 mg/kg

21130-PSP-0003-E
(ASL D/E[1])

Analyte	Off-Property FRL	MDL
Bromodichloromethane	0.18 mg/kg	0.018 mg/kg
Trichloroethene	1.5 mg/kg	0.1 mg/kg

[1]Analytical requirements will meet ASL D but the minimum detection level may cause some analyses to be considered ASL E
[2]10 percent of the FRL is not achievable for this analyte
[3]If the BTV is lower than the established FRL, the MDL shall bet set at 10 percent of the BTV
[4]FRL is actually for 1,1,2-Trichloroethane since 1,1,1-Trichloroethane does not have a FRL.
[5]FRL is not achievable for these analytes
BTV – Benchmark Toxicity Value
MDL – minimum detection level
mg/kg – milligrams per kilogram
pCi/g – picoCuries per gram

4.0 QUALITY ASSURANCE/QUALITY CONTROL REQUIREMENTS

4.1 FIELD QUALITY CONTROL SAMPLES, ANALYTICAL REQUIREMENTS AND DATA VALIDATION

Per requirements of the SEP and DQO SL-052, Revision 3, the field quality control, analytical and data validation requirements are as follows:

- Field QC requirements include one field duplicate for each CU, as noted in Appendix B and Section 2.3. Field duplicate samples will be analyzed for the ASCOCs from the CU in which they were collected. Two container blanks will be collected - one before sample collection begins and one at the conclusion of sample collection for the entire A9PIII area - for the push tubes. If an alternate sample collection method is used, one rinsate will be collected at a minimum frequency of one per 20 pieces of equipment reused in the field. Container blanks and/or rinsates will be analyzed for the ASCOCs from the CU in which they were collected. Trip blanks are required if VOC samples are being collected. The frequency for a trip blank is one per day or one per batch of 20 VOC samples collected, whichever is more frequent.

- All analyses will be performed at ASL D or E, where E meets the minimum detection level of 10 percent of the FRL and is above the SCQ ASL D detection level, but the analyses meet all other SCQ ASL D criteria. An ASL D data package will be provided for a minimum of 10 percent of the data, with an ASL B data package for the remaining 90 percent.

- All field data will be validated. All laboratory results will be validated to validation support level (VSL) B, and a minimum of 10 percent of the results will be validated to VSL D. If any result is rejected during validation, the sample will be re-analyzed or an archive sample will be analyzed in its place. All data from that laboratory will be validated to VSL D for the affected CU. If necessary, this change will be documented in a V/FCN.

Once all data are validated as required, results will be entered into the SED and a statistical analysis will be performed to evaluate the pass/fail criteria for the each CU. The statistical approach is discussed in Section 3.4.3 and Appendix G of the SEP and Section 3.4.8 of the SEP Addendum.

If any sample collection or analytical methods are used that are not in accordance with the SCQ, the Project Director and Characterization Manager must determine if the qualitative data from the samples will be beneficial to certification decision making. If the data will be beneficial, the Project Director and Characterization Manager will ensure that:

- A variance to the PSP will be written to document references confirming that the new method supports data needs,

- variations from the SCQ methodology are documented in a variance to the PSP, or

- data validation of the affected samples is requested or qualifier codes of J (estimated) and R (rejected) be attached to detected and non-detected results, respectively.

4.2 PROJECT SPECIFIC PROCEDURES, MANUALS AND DOCUMENTS

Programs supporting this work are responsible for ensuring team members work to and are trained to applicable documents. Additionally, programs supporting this work are responsible for ensuring team members in their organizations are qualified and maintain qualification for site access requirements. The Project Manager will be responsible for ensuring any project-specific training required to perform work per this PSP is conducted.

To ensure consistency and data integrity, field activities in support of the PSP will follow the requirements and responsibilities outlined in the procedures and guidance documents referenced below.

- Sitewide Excavation Plan (SEP)
- SEP Addendum
- Sitewide CERCLA Quality Assurance Project Plan (SCQ)
- 20100-HS-0002, Soil & Disposal Facility Project (DSDP) Integrated Health and Safety Plan
- SH-1006, Event Investigation and Reporting
- ADM-02, Field Project Prerequisites
- EQT-06, Geoprobe® Model 5400
- EQT-33, Real-Time Differential Global Positioning System
- SMPL-01, Solids Sampling
- SMPL-21, Collection of Field Quality Control Samples
- 9501, Shipping Samples to Off-site Laboratories

4.3 INDEPENDENT ASSESSMENT

Independent assessment may be performed by the FCP QA/QC organization by conducting a surveillance, consisting of monitoring/observing on-going project activities and work areas to verify conformance to specified requirements. The surveillance will be planned and documented in accordance with Section 12.3 of the SCQ.

4.4 IMPLEMENTATION OF CHANGES

Before the implementation of changes, the Field Sampling Lead will be informed of the proposed changes. Once the Field Sampling Lead has obtained written or verbal approval (electronic mail is acceptable) from the Characterization Manager and QA/QC for the changes to the PSP, the changes may be implemented. Changes to the PSP will be noted in the applicable FALs and on a V/FCN. QA/QC must receive the completed V/FCN, which includes the signatures of the Characterization and Sampling Managers, Project Director, and QA/QC within seven days of implementation of the change. The U.S. Environmental Protection Agency and Ohio Environmental Protection Agency will be given a 15-day review period prior to implementing the change(s) for any V/FCNs identified as "significant" per DSDP guidelines.

5.0 HEALTH AND SAFETY

Applicable work permits will be obtained per SH-0021, Work Permits, by the Soil Sampling Manager or designee. All work performed on this project will be performed in accordance with applicable Environmental Services procedures, RM-0020 (Radiological Control Requirements Manual), RM-0021 (Safety Performance Requirements Manual), Fluor Fernald work permits, RWP, penetration permits, and other applicable permits. Concurrence with applicable safety permits (as indicated by the signature of each field employee assigned to this project) is required by each employee in the performance of their assigned duties. A safety briefing will be conducted prior to the initiation of field activities.

A walk-down of the area by representatives from DSDP Characterization, RTIMP and the Soil and Miscellaneous Media Sampling (SMMP) groups may be required to determine the type of in situ gamma spectroscopy equipment to use and if the excavation lift area is ready for measurements or physical sampling (i.e., accessible by RTIMP equipment, boundaries marked or readily visible, no operating heavy duty equipment within 50-foot buffer zone, no excessive moisture or puddles, no soft spots, free of obstructions or depressions that might damage equipment, reasonable grade and slopes).

All personnel performing measurements and physical sampling related to this project will be briefed to work control documents, including the Contractor Safe Work Plan or Traveler Package, Fluor Fernald work permits, RWP, penetration permits, other applicable permits for the applicable area, and Environmental Services procedures. These work control documents will define required personal protective equipment (PPE) and safe work zones. Work control documents must be reviewed by Soil Sampling and RTIMP personnel to ensure that the intended work is within the scope of these documents (i.e., ensure work to be performed is addressed in the permit). These briefings will be documented. Personnel who are not documented as having completed these briefings will not participate in the execution of field activities. All personnel entering the Construction Area will obtain a pre-entry briefing on current activities or hazards that may affect their work. Additionally, prior to entry into an excavation, the Competent Person for Trenching and Excavation shall be contacted to assure that the daily inspection has been completed and the excavation is safe to enter.

RTIMP personnel are to demarcate a minimum of a 50-foot safe work zone for HPGe (tripod) measurement locations and RSS runs in the field using a sufficient number of construction cones to clearly demarcate the work zone. RTIMP personnel operating the HPGe (tripod) and RSS in the construction area

are occupied with watching measurement equipment computer screens and maneuvering the equipment. RTIMP personnel may not be aware of construction equipment moving in the field and operators of the construction equipment may not see the smaller HPGe (tripod) and RSS equipment/operator. The cones will be a visible indicator to construction equipment operators of the safe zone perimeter around this equipment. A 50-foot safe work zone does not need to be established for RTRAK, GATOR, and the EMS since this equipment is larger and more visible and it is easier for the driver to watch for approaching equipment.

The Health and Safety Lead, Soil Sampling Manager or designee, and team members will assess the safety of performing sampling activities in the vicinity of each boring location. This will include vehicle/equipment positioning limitations and fall hazards. The Soil Sampling Manager or designee will ensure that each Technician performing work related to this project has been trained to the relevant sampling procedures including safety precautions. Technicians who do not sign project safety and technical briefing forms will not participate in any activity related to the completion of assigned project responsibilities. A copy of applicable safety permits/surveys issued for worker safety and health will be posted in the affected area during field activities.

All off-site emergencies shall be reported immediately by using the local 911 system to get emergency assistance. As time permits, project management, AEDO and project safety should be contacted as to what event occurred and actions taken and reporting.

6.0 DISPOSITION OF WASTE

During sampling activities, field personnel may generate small amounts of soil, water, and contact waste. Excess soil generated during sample collection will be replaced in the borehole. Contact waste generation will be minimized by limiting contact with sample media, and by only using disposable materials that are necessary. Contact waste will be bagged and brought back to site for disposal in an uncontrolled area dumpster. Generation of decontamination waters will be minimized in the field. Decontamination water that is generated will be contained in a plastic bucket with a lid and returned to site for disposal. A wastewater discharge form must be completed for disposal. On-site decontamination of equipment will take place at a facility that discharges to the Advanced Wastewater Treatment Facility, either directly or indirectly, through the storm water collection system.

7.0 DATA MANAGEMENT

A data management process will be implemented so information collected during the investigation will be properly managed to satisfy data end use requirements after completion of field activities. As specified in Section 5.1 of the SCQ, sampling teams will describe daily activities on a FAL, which should be sufficiently detailed for accurate reconstruction of the events without reliance on memory. Sample Collection Logs will be completed according to protocols specified in Appendix B of the SCQ and in applicable procedures. These forms will be maintained in loose-leaf form and uniquely numbered following the sampling event.

All field measurements, observations, and sample collection information associated with physical sample collection will be recorded, as applicable, on the Sample Collection Log, the FAL, the Chain of Custody/Request for Analysis form, the Lithologic Log, and Borehole Abandonment Record. The PSP number will be on all documentation associated with these sampling activities.

Samples will be assigned a unique sample number as explained in Section 2.3.2 and listed in Appendix B. This unique sample identifier will appear on the Sample Collection Log and Chain of Custody/Request for Analysis form and will be used to identify the samples during analysis, data entry, and data management.

Technicians will review all field data for completeness and accuracy then forward the field data package to the Field Data Validation Contact for final QA/QC review. Analytical data will be entered into FACTS by Sample Data Management personnel. Analytical data that is designated for data validation will be forwarded to the Data Validation Group. The PSP requirements for analytical data validation are outlined in Section 4.1. Analytical data will be reviewed by the Data Management Lead upon receipt from the off-site laboratories.

Following field and analytical data validation, the Sample Data Management organization will perform data entry into the SED. The original field data packages, original analytical data packages, and original documents generated during the validation process will be maintained as project records by the Sample Data Management organization.

To ensure that correct coordinates and survey information are tied to the final sample locations in the database, the following process will take place. Upon surveying all locations identified in the PSP, the Surveying Manager will provide the Data Management Lead (i.e., DSDP Characterization) with an electronic file of all surveyed coordinates and surface elevations. The Sampling Manager will provide the Data Management Lead with a list of any locations that must be moved during penetration permitting or collection, and the Data Management Lead will update the electronic file with this information. After sample collection is complete, the Data Management Lead will provide this electronic file to the Database Contact for uploading to SED.

APPENDIX A

DATA QUALITY OBJECTIVES SL-052, REV. 3

5629

Control Number _____

Fernald Environmental Management Project

Data Quality Objectives

Title: Sitewide Certification Sampling and Analysis

Number: SL-052

Revision: 3

Effective Date: March 13, 2000

Contact Name: Mike Rolfes

Approval: _____ Date: 3/13/00
James Chambers
DQO Coordinator

Approval: _____ Date: 3/13/00
J.D. Chiou
SCEP Project Director

Rev. #	0	1	2	3			
Effective Date:	4/28/99	6/10/99	2/3/00	3/13/00			

DATA QUALITY OBJECTIVES
Sitewide Certification Sampling and Analysis

Members of Data Quality Objectives (DQO) Scoping Team

The members of the scoping team included individuals with expertise in QA, analytical methods, field sampling, statistics, laboratory analytical methods and data management.

Conceptual Model of the Site

Soil sampling was conducted at the Fernald Environmental Management Project (FEMP) during the Operable Unit 5 (OU5) Remedial Investigation/Feasibility Study (RI/FS). Final Remediation Levels (FRLs) for constituents of concern (COCs), along with the extent of soil contaminated above the FRLs, were identified in the OU5 Record of Decision (ROD). Actual soil remediation activities now fall under the guidance of the final Sitewide Excavation Plan (SEP).

As outlined in the SEP, the FEMP has been divided into individual Remediation Areas (or phased areas within a Remediation Area) to sequentially carry out soil remedial activities. Under the strategy identified in the SEP, pre-design investigations are first conducted to better define the limits of soil excavation requirements. Following any necessary excavation, pre-certification real-time scanning activities are conducted to evaluate residual patterns of soil contamination. Pre-certification scan data should provide a level of assurance that the FRLs will be achieved. When pre-certification data indicate that remediation goals are likely to be met, they are used to define certification units (CUs) within the Remediation Area of interest. Table 2-9 of the final SEP identifies a list of area-specific COCs (ASCOCs) for each Remediation Area at the FEMP. Based on existing data and production knowledge, a subset of these ASCOCs are conservatively identified within each CU as potentially present in the CU. This suite of CU-specific COCs is the subset of the ASCOCs to be evaluated against the FRLs within that CU. At a minimum, the five primary radiological COCs (total uranium, radium-226, radium-228, thorium-228, thorium-232) will be retained as CU-specific COCs for certification of each CU.

Delineation and justification for the final CU boundaries, along with each corresponding suite of CU-specific ASCOCs is documented in a Certification Design Letter. Upon approval of the Certification Design Letter by the EPA, certification activities can begin. Section 3.4 of the final SEP presents the general certification strategy.

1.0 Statement of Problem

FEMP soil and potentially impacted adjacent off-property soil must be certified on a CU by CU basis for compliance with the FRLs of all CU-specific ASCOCs. The appropriate sampling, analytical and information management criteria must be developed to provide the required qualified data necessary to demonstrate attainment of certification statistical criteria. For every area undergoing certification, a sampling plan must be in place that will direct soil samples to be collected which are representative of the CU-specific COC concentrations within the framework of the certification approach identified in the final SEP. The appropriate analytical methodologies must be selected to provide the required data.

Exposure to Soil

The cleanup standards, or FRLs, were developed for a final site land use as an undeveloped park. Under this exposure scenario, receptors could be directly exposed to contaminated soil through dermal contact, external radiation, incidental ingestion, and/or inhalation of fugitive dust while visiting the park. Exposure to contaminated soil by the modeled receptor is expected to occur at random locations within the boundaries of the FEMP and would not be limited to any single area. Some soil FRLs were developed based on the modeled cross-media impact potential of soil contamination to the underlying aquifer. In these instances, potential exposure to contaminants would be indirect through the groundwater pathway, and not directly linked to soil exposure. Off-site soil FRLs were established at more conservative levels than the on-property soil FRLs, based on an agricultural receptor. Benchmark Toxicity Values (BTVs) are also being considered in the cleanup process by assessing habitat impact of individual BTVs under post-remedial conditions.

Available Resources

Time: Certification sampling will be accomplished by the field sampling team prior to interim or final regrading or release of soil for construction activities. The certification sampling schedule must allow sufficient time, in the event additional remediation is required, to demonstrate certification of FRLs prior to permanent construction or regrading. Certification sampling will have to be completed and analytical results validated and statistical analysis completed prior to submission of a Certification Report to the regulatory agencies.

Project Constraints: Certification sampling and analytical testing must be performed with existing manpower, materials and equipment to support the certification effort. Remediation areas are prioritized for certification sampling and analysis according to the date required for initiation of sequential construction activities in those areas. Fluor Daniel Fernald (FDF) and DOE must demonstrate post-remedial compliance with the CU-specific COC FRLs to release the designated Remediation Area for

planned interim grading, eventual restoration under the Natural Resources Restoration Plan (NRRP), and other final land use activities.

2.0 Identify the Decision

Decision

Demonstrate within each CU if all CU-specific COCs pass the certification criteria. These criteria are as follows: 1) The average concentration of each CU-specific COC is below the FRL and within the agreed upon confidence limits (95% for primary ASCOCs and 90% for secondary ASCOCs); and 2) the hot-spot criteria, that no result for any CU-specific COC is more than two times the associated soil FRL. The certification criteria are discussed in greater detail in Section 3.4.4 of the final SEP.

Possible Results

1. The average concentration of each CU-specific COC is demonstrated to be below the FRLs within the confidence level, with no single result for any CU-specific COC greater than two times the associated FRL. The CU can then be certified as attaining remediation goals.

2. The average concentration of at least one CU-specific COC is demonstrated to be above the FRL at the given confidence level. The CU will fail certification and require additional remedial action, per Section 3.4.5 of the final SEP.

3. If a result(s) of one or more CU-specific COC is demonstrated to be at or above two times the FRL, the CU will fail certification. The CU will fail certification and require additional remedial action per Section 3.4.5 of the final SEP. A combination of results 2 and 3 also constitutes certification failure.

3.0 Inputs That Affect the Decision

Required Information

Certification data will be obtained through physical soil sampling. Based on the certification analytical results, the average concentrations of each CU-specific COC with specified confidence levels will be calculated using the statistical methods identified in Appendix G of the final SEP.

Source of Information

Per the SEP, analysis of certification samples for each CU-specific COC will be conducted at analytical support level (ASL) D in accordance with methods and QA/QC standards in the FEMP Sitewide CERCLA Quality Assurance Project Plan [SCQ].

Contaminant-Specific Action Levels
The cleanup levels are the soil FRLs published in the OU5 and OU2 RODs. BTVs being considered in the remediation process are discussed for consideration during certification in Appendix C of the NRRP.

Methods of Sampling and Analysis
Physical soil samples will be collected in accordance with the applicable site sampling procedures. Per the SEP, laboratory analysis will be conducted at ASL D using QA/QC protocols specified in the SCQ. Full raw data deliverables will be required from the laboratory to allow for appropriate data validation. For FEMP-approved on- and off-site laboratories, the analytical method used will meet the required precision, accuracy and detection capabilities necessary to achieve FRL analyte ranges.

4.0 The Boundaries of the Situation

Spatial Boundaries
Domain of the Decision: The boundaries of this certification DQO extend to all surface, stockpile and fill soil in areas that are undergoing certification as part of FEMP remediation.

Population of Soil: Soil includes all excavated surfaces, undisturbed relatively unimpacted native soil, and sub-surface intervals (stockpile or fill areas only) in areas undergoing certification sampling and analysis.

Scale of Decision Making
Based on considerations of the final certification units and the COC evaluation process, the CU-specific COCs are determined. The area undergoing certification will be evaluated on a CU basis, based on physical sample results, as to whether it has passed or failed the criteria for attainment of certification (final SEP Section 3.4.4).

Temporal Boundaries
Time frame: Certification sampling must be performed in time to sequentially release certified areas for scheduled interim grading, restoration, and other final land use activities. Certification sampling data received from the laboratory will be validated and statistically evaluated. Certification results and findings will be documented in Certification Reports, which must be submitted to and approved by the regulatory agencies prior to release of the areas for scheduled interim grading, restoration, and other final land use activities.

Practical Considerations: Some areas undergoing remediation will not be accessible for certification sampling until decontamination/demolition and remedial excavation activities are complete. Other areas, such as wood lots, that are relatively uncontaminated and not planned for excavation, may require preparation, such as cutting of grass or removal of undergrowth prior to certification sampling, thus requiring coordination with FEMP Maintenance personnel.

5.0 Decision Rule

Successful certification of soil within the boundaries of a certification unit (CU) demonstrates that the certified soil (surface or subsurface) has concentrations of CU-specific COC(s) that meet the established criteria for attainment of Certification.

Parameters of Interest

The parameters of interest are the individual and average surface soil concentrations of CU-specific COCs and confidence limits on the calculated average within a CU. OU2 and OU5 ROD identify all applicable soil FRLs. The SEP identifies the ASCOCs, a subset of which will be used to establish CU-specific COCs within each Remediation Area undergoing certification sampling and analysis.

Action Levels

The applicable action levels are the on- and off-property soil FRLs published in the OU5 or OU2 ROD for each ASCOC.

Decision Rules

If the average concentration for each CU-specific COC is demonstrated to be below the FRLs within the agreed upon confidence level (95% for primary COCs; 90% for secondary COCs), and no analytical result exceeds two times the soil FRL, then the CU can be certified as complying with the cleanup criteria. If a CU does not meet the FRLs within the agreed upon confidence level for one or more CU-specific COCs, or one or more analytical results for one or more CU-specific COCs is greater than two times the associated soil FRL, then the CU fails certification and requires further assessment as per the SEP.

6.0 Limits on Decision Errors

Types of Decision Errors and Consequences

Definition

Decision Error 1: This decision error occurs when the decision maker decides that a CU has met the certification criteria, when in reality, the certification criteria have not been met. This situation could result in an increased risk to human health and the environment. In addition, this type of error could result in regulatory fees and penalties.

Decision Error 2: This decision error occurs when the decision maker decides a CU does not met the certification criteria, when actually, the certification criteria have been met. This error would result in unnecessary added costs due to the excavation of soil containing COC concentrations below their FRLs, and an increased volume of soil assigned to the OSDF. In addition, unnecessary delays in the remediation schedule may result.

True State of Nature for the Decision Errors

The true state of nature for Decision Error 1 is that the certification criteria are not met (average CU-specific COC concentrations not below the FRL within the specified confidence limits; or a single sample result above two times the FRL). The true state of nature for Decision Error 2 is that certification criteria are met (average CU-specific COC concentrations are below the FRL within the specified confidence limits, and no result is above two times the FRL). Decision Error 1 is the more severe error due to the potential threat this poses to human health and the environment.

Null Hypothesis

H_o: The average concentration of at least one CU-specific COC within a CU is equal to or greater than the associated FRL.

H_1: The average concentration of all CU-specific COCs within a CU is less than the action levels.

False Positive and False Negative Errors

A false positive is Decision Error 1: less than or equal to five percent ($p = .05$) is considered the acceptable decision error in determination of compliance with FRLs for primary ASCOCs, while ten percent ($p = .10$) is acceptable for secondary ASCOCs.

A false negative is Decision Error 2: less than or equal to 20 percent is considered the acceptable decision error. This decision error is controlled through the determination of sample sizes (see Section G.1.4.1 of the final SEP).

7.0 Design for Obtaining Quality Data

Section 3.4.2 of the final SEP presents the specifics of the certification sampling design. The following text describes the general certification sampling design.

Soil Sample Locations

In order to select certification sampling locations, each CU is divided into 16 approximately equal sub-CUs. Certification sample locations are then generated by randomly selecting an easting and northing coordinate within the boundaries of each cell. Additional alternative sample locations are also generated in case the original random sample location fails the minimum distance criterion. The minimum distance criterion is defined as the minimum distance allowed between random sample locations in order to eliminate the chance of random sample points clustering within a small area. This clustering would tend to over emphasize a small area and, conversely, under represent a large area in certification determination. By not allowing sample locations to be too closely arranged, the sample locations are spread out and provide a more uniform coverage, thus reducing the possibility of large unsampled areas. The equation for determining minimum distance criterion is presented in Section 3.4.2.1 of the SEP.

In the event that the original random sample location failed the minimum distance criterion, the first alternate location was selected and all the locations were retested. This process continued until all 16 random locations passed the minimum distance criteria.

Each CU is also divided into four quadrants, each of which contains 4 sub-CUs and 4 sample locations. Three of the four locations per quadrant (12 per CU) are then selected for sample collection and analysis. The other one per quadrant (4 per CU) are designated as "archives", and samples will not be collected and analyzed unless need arises due to analytical or validation problems warrant. Per Section 3.4.2 of the SEP, as few as 8 samples may be collected from Group 2 CUs for analysis of secondary COCs.

Physical Samples

Physical soil certification samples will be collected from the surface according to SMPL-01 at locations identified in the PSP (generally 12 of the 16 locations per CU).

If stockpiled soil is to be certified, two CUs will be established, on for the stockpile and one for the underlying soil (i.e., the "footprint"). To certify the stockpile, samples will be collected from predetermined random intervals from within the stockpiled soil at each certification sampling location identified in the PSP. To certify the footprint, the first 6-inches of native soil present at each sampling location will also be collected for certification. If fill soil is to be certified, the strategy (surface or sampling at depth) will be based on results from the precertification scan of the fill area(s), as discussed in the Certification Design Letter and the certification PSP.

Laboratory Analysis

As defined in the PSP, a minimum of 8 to 12 samples per CU will be submitted to the on-site laboratory or a FDF approved off-site laboratory for analysis. All certification analyses will meet ASL D requirements per the SCQ except for the HAMDC. Samples will be analyzed for all CU-specific ASCOCs, with minimum detection levels set according to the SCQ and applicable project guidelines.

Validation

All field data will be validated. Also, a minimum of 10 percent of the analytical data from each laboratory will be subject to analytical validation to ASL D requirements in the SCQ, and will require an ASL D package. The remaining analytical data will be validated to a minimum of ASL B, and will require an ASL B package.

8.0 Use of Data to Test Null Hypothesis

Appendix G of the final SEP discusses in detail, the statistical evaluations of certification data used to determine attainment of certification criteria.

Data Quality Objectives
Sitewide Certification Sampling and Analysis

1A. Task Description:

1B. Project Phase: (Put an X in the appropriate selection.)

RI☐ FS☐ RD☐ RA☒ RvA☐ Other (specify) _____

1C. DQO No.: SL-052, Rev. 2 DQO Reference No.: _____

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2. Media Characterization: (Put an X in the appropriate selection.)

Air☐ Biological☐ Groundwater☐ Sediment☒ Soil☒
Waste☐ Wastewater☐ Surface Water☐ Other (specify) _____

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3. Data Use with Ananlytical Support Level (A-E): (Put an X in the appropriate Analytical Support Level selection(s) beside each applicable data use)

Site Characterization A☐ B☐ C☐ D☐ E☐	Risk Assessment A☐ B☐ C☐ D☐ E☐
Evaluation of Alternatives A☐ B☐ C☐ D☐ E☐	Engineering Design A☐ B☐ C☐ D☐ E☐
Monitoring During Remediation A☐ B☐ C☐ D☐ E☐	Other A☐ B☐ C☐ D☒ E☐

4A. Drivers: Remediation Area Remedial Action Work Plans, Applicable or Relevant and Appropriate Requirements (ARARs) and Operable Unit 2 and Operable Unit 5 Records of Decision (ROD), Sitewide Excavation Plan (SEP).

4B. Objective: Confirmation that remediation areas at the FEMP, or adjacent off-property areas, have met certification criteria on a CU by CU basis.

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5. Site Information (Description):

The OU2 and OU5 RODs have identified areas at the FEMP that require soil remediation activities. The RODs specify that the soil in these areas will be demonstrated to be below the FRLs. Certification is necessary for all FEMP soil and some adjacent off-property soil to demonstrate that the residual soil does not contain COC contamination exceeding the FRL at a specified confidence level.

6A. Data Types with appropriate Analytical Support Level Equipment Selection and SCQ Reference: (Place an "X" to the right of the appropriate box or boxes selecting the type of analysis or analyses required. Then select the type of equipment to perform the analysis if appropriate. Please include a reference to the SCQ Section.)

1. pH	☐	2. Uranium	☒*	3. BTX	☐
Temperature	☐	Full Radiological	☒*	TPH	☐
Specific Conductance	☐	Metals	☒*	Oil/Grease	☐
Dissolved Oxygen	☐	Cyanide	☐		
Technetium-99	☒*	Silica	☐		
4. Cations	☐	5. VOA	☒*	6. Other (specify)	
Anions	☐	BNA	☐		
TOC	☐	PEST	☒*		
TCLP	☐	PCB	☒*		
CEC	☐	COD	☐		

* As identified in the area certification PSP

6.B. Equipment Selection and SCQ Reference:

Equipment Selection		Refer to SCQ Section	
ASL A		SCQ Section	
ASL B		SCQ Section	
ASL C		SCQ Section	
ASL D	Per SCQ and PSP	SCQ Section	Appendix G, Tbls. 1&3
ASL E	Per PSP	SCQ Section	Appendix H (final)

7A. Sampling Methods: (Put an X in the appropriate selection.)

Biased☐ Composite☐ Grab☒ Environmental☐ Grid☐
Intrusive☒ Non-Intrusive☐ Phased☐ Source☐ Random☒*
*Systematic random samples, selected one per cell and meeting the minimum distance criterion

7B. Sample Work Plan Reference: Project Specific Plan for the associated Remediation area Remedial Action Work Plan

Background samples: OU5 RI

7C. Sample Collection Reference: Associated PSP(s), SMPL-01

8. Quality Control Samples: (Put an X in the appropriate selection.)

8A. Field Quality Control Samples:

Trip Blanks	☒[1]	Container Blanks	☒
Field Blanks	☒[2]	Duplicate Samples	☒
Equipment Rinsate Blanks	☒	Split Samples	☒[3]
Preservative Blanks	☐	Performance Evaluation Samples	☐

Other (specify) _____

1) Collected for volatile organic sampling
2) As noted in the PSP
3) Split samples will be taken where required by the EPA

8B. Laboratory Quality Control Samples:

Method Blank	☒	Matrix Duplicate/Replicate	☒
Matrix Spike	☒	Surrogate Spikes	☒
Tracer Spike	☒	Other (specify) _____	

9. Other: Please identify any other germane information that may impact the data quality or gathering of this particular objective, task, or data use.

Sample density will be dependent upon the CU size (Group 1 [250'x250'] or Group 2 [500'x500']), as determined by historical and pre-certification scan data.

APPENDIX B

SAMPLE LOCATION AND IDENTIFIERS

APPENDIX B
A9PIII - PART ONE CERTIFICATION SAMPLES

CU	Location	Depth	Sample ID	Analysis	East-83	North-83
1	1-1	0"-6"	A9P3-C01-1^RMP	TAL A & B	1351841.44	479480.06
			A9P3-C01-1^L	TAL D		
	1-2	0"-6"	A9P3-C01-2^RMP	TAL A & B	1351884.06	479478.59
			A9P3-C01-2^L	TAL D		
	1-3	0"-6"	A9P3-C01-3^RMP	TAL A & B	1351926.66	479477.11
			A9P3-C01-3^L	TAL D		
	1-4V	0"-6"	A9P3-C01-4^V	Archive	1351969.16	479475.55
	1-5	0"-6"	A9P3-C01-5^RMP	TAL A & B	1352011.88	479474.15
			A9P3-C01-5^L	TAL D		
	1-6	0"-6"	A9P3-C01-6^RMP	TAL A & B	1352124.21	479458.5
			A9P3-C01-6^L	TAL D		
	1-7	0"-6"	A9P3-C01-7^RMP	TAL A & B	1352166.39	479452.26
			A9P3-C01-7^L	TAL D		
	1-8V	0"-6"	A9P3-C01-8^V	Archive	1352208.57	479446.02
	1-9D	0"-6"	A9P3-C01-9^RMP	TAL A & B	1352250.75	479439.78
			A9P3-C01-9^L	TAL D		
			A9P3-C01-9^RMP-D	TAL A & B		
			A9P3-C01-9^L-D	TAL D		
	1-10	0"-6"	A9P3-C01-10^RMP	TAL A & B	1352292.92	479433.49
			A9P3-C01-10^L	TAL D		
	1-11	0"-6"	A9P3-C01-11^RMP	TAL A & B	1352335.06	479427.07
			A9P3-C01-11^L	TAL D		
	1-12V	0"-6"	A9P3-C01-12^V	Archive	1352377.22	479420.66
	1-13	0"-6"	A9P3-C01-13^RMP	TAL A & B	1352419.36	479414.25
			A9P3-C01-13^L	TAL D		
	1-14	0"-6"	A9P3-C01-14^RMP	TAL A & B	1352461.52	479407.83
			A9P3-C01-14^L	TAL D		
	1-15	0"-6"	A9P3-C01-15^RMP	TAL A & B	1352503.67	479401.42
			A9P3-C01-15^L	TAL D		
	1-16V	0"-6"	A9P3-C01-16^V	Archive	1352545.82	479395.01
	1-17	0"-6"	A9P3-C01-17^RMP	TAL A & B	1351794.84	479481.68
			A9P3-C01-17^L	TAL D		

APPENDIX B
A9PIII - PART ONE CERTIFICATION SAMPLES

CU	Location	Depth	Sample ID	Analysis	East-83	North-83
2	2-1	0"-6"	A9P3-C02-1^RMP	TAL A & B	1352587.97	479388.59
			A9P3-C02-1^L	TAL D		
	2-2	0"-6"	A9P3-C02-2^RMP	TAL A & B	1352630.12	479382.18
			A9P3-C02-2^L	TAL D		
	2-3	0"-6"	A9P3-C02-3^RMP	TAL A & B	1352672.27	479375.77
			A9P3-C02-3^L	TAL D		
	2-4V	0"-6"	A9P3-C02-4^V	Archive	1352714.43	479369.35
	2-5D	0"-6"	A9P3-C02-5^RMP	TAL A & B	1352756.57	479362.94
			A9P3-C02-5^L	TAL D		
			A9P3-C02-5^RMP-D	TAL A & B		
			A9P3-C02-5^L-D	TAL D		
	2-6	0"-6"	A9P3-C02-6^RMP	TAL A & B	1352798.72	479356.49
			A9P3-C02-6^L	TAL D		
	2-7	0"-6"	A9P3-C02-7^RMP	TAL A & B	1352840.19	479346.62
			A9P3-C02-7^L	TAL D		
	2-8V	0"-6"	A9P3-C02-8^V	Archive	1352881.67	479336.75
	2-9	0"-6"	A9P3-C02-9^RMP	TAL A & B	1352923.16	479326.88
			A9P3-C02-9^L	TAL D		
	2-10	0"-6"	A9P3-C02-10^RMP	TAL A & B	1352964.63	479317.01
			A9P3-C02-10^L	TAL D		
	2-11	0"-6"	A9P3-C02-11^RMP	TAL A & B	1353006.11	479307.14
			A9P3-C02-11^L	TAL D		
	2-12V	0"-6"	A9P3-C02-12^V	Archive	1353047.58	479297.28
	2-13	0"-6"	A9P3-C02-13^RMP	TAL A & B	1353088.92	479286.84
			A9P3-C02-13^L	TAL D		
	2-14	0"-6"	A9P3-C02-14^RMP	TAL A & B	1353130.11	479275.8
			A9P3-C02-14^L	TAL D		
	2-15	0"-6"	A9P3-C02-15^RMP	TAL A & B	1353171.28	479264.76
			A9P3-C02-15^L	TAL D		
	2-16V	0"-6"	A9P3-C02-16^V	Archive	1353212.47	479253.73

APPENDIX B
A9PIII - PART ONE CERTIFICATION SAMPLES

CU	Location	Depth	Sample ID	Analysis	East-83	North-83
3	3-1	0"-6"	A9P3-C03-1^RMP	TAL A & B	1353253.65	479242.69
			A9P3-C03-1^L	TAL D		
	3-2	0"-6"	A9P3-C03-2^RMP	TAL A & B	1353294.84	479231.66
			A9P3-C03-2^L	TAL D		
	3-3	0"-6"	A9P3-C03-3^RMP	TAL A & B	1353336.02	479220.62
			A9P3-C03-3^L	TAL D		
	3-4V	0"-6"	A9P3-C03-4^V	Archive	1353377.2	479209.59
	3-5	0"-6"	A9P3-C03-5^RMP	TAL A & B	1353418.39	479198.55
			A9P3-C03-5^L	TAL D		
	3-6	0"-6"	A9P3-C03-6^RMP	TAL A & B	1353459.56	479187.52
			A9P3-C03-6^L	TAL D		
	3-7	0"-6"	A9P3-C03-7^RMP	TAL A & B	1353500.75	479176.48
			A9P3-C03-7^L	TAL D		
	3-8V	0"-6"	A9P3-C03-8^V	Archive	1353541.94	479165.44
	3-9	0"-6"	A9P3-C03-9^RMP	TAL A & B	1353583.12	479154.41
			A9P3-C03-9^L	TAL D		
	3-10	0"-6"	A9P3-C03-10^RMP	TAL A & B	1353624.3	479143.37
			A9P3-C03-10^L	TAL D		
	3-11	0"-6"	A9P3-C03-11^RMP	TAL A & B	1353665.48	479132.34
			A9P3-C03-11^L	TAL D		
	3-12V	0"-6"	A9P3-C03-12^V	Archive	1353706.67	479121.3
	3-13	0"-6"	A9P3-C03-13^RMP	TAL A & B	1353747.85	479110.26
			A9P3-C03-13^L	TAL D		
	3-14D	0"-6"	A9P3-C03-14^RMP	TAL A & B	1353789.03	479099.23
			A9P3-C03-14^L	TAL D		
			A9P3-C03-14^RMP-D	TAL A & B		
			A9P3-C03-14^L-D	TAL D		
	3-15	0"-6"	A9P3-C03-15^RMP	TAL A & B	1353830.22	479088.19
			A9P3-C03-15^L	TAL D		
	3-16V	0"-6"	A9P3-C03-16^V	Archive	1353861.74	479079.75

APPENDIX B
A9PIII - PART ONE CERTIFICATION SAMPLES

CU	Location	Depth	Sample ID	Analysis	East-83	North-83
4	4-1	0"-6"	A9P3-C04-1^RMP	TAL A & B	1353057.27	479289.19
			A9P3-C04-1^L	TAL D		
	4-2V	0"-6"	A9P3-C04-2^V	Archive	1353084.31	479311.12
	4-3	0"-6"	A9P3-C04-3^RMP	TAL A & B	1353045.14	479255.2
			A9P3-C04-3^L	TAL D		
	4-4	0"-6"	A9P3-C04-4^RMP	TAL A & B	1353058.75	479234.63
			A9P3-C04-4^L	TAL D		
	4-5	0"-6"	A9P3-C04-5^RMP	TAL A & B	1353092.11	479275.41
			A9P3-C04-5^L	TAL D		
	4-6	0"-6"	A9P3-C04-6^RMP	TAL A & B	1353109.93	479294.12
			A9P3-C04-6^L	TAL D		
	4-7V	0"-6"	A9P3-C04-7^V	Archive	1353082.93	479249.25
	4-8	0"-6"	A9P3-C04-8^RMP	TAL A & B	1353107.03	479237.37
			A9P3-C04-8^L	TAL D		
	4-9D	0"-6"	A9P3-C04-9^RMP	TAL A & B	1353136.49	479272.26
			A9P3-C04-9^L	TAL D		
			A9P3-C04-9^RMP-D	TAL A & B		
			A9P3-C04-9^L-D	TAL D		
	4-10V	0"-6"	A9P3-C04-10^RMP	Archive	1353158.12	479284.62
	4-11	0"-6"	A9P3-C04-11^RMP	TAL A & B	1353117.61	479218.34
			A9P3-C04-11^L	TAL D		
	4-12	0"-6"	A9P3-C04-12^RMP	TAL A & B	1353146.21	479248.99
			A9P3-C04-12^L	TAL D		
	4-13	0"-6"	A9P3-C04-13^RMP	TAL A & B	1353175.83	479291.08
			A9P3-C04-13^L	TAL D		
	4-14	0"-6"	A9P3-C04-14^RMP	TAL A & B	1353194.1	479259.39
			A9P3-C04-14^L	TAL D		
	4-15	0"-6"	A9P3-C04-15^RMP	TAL A & B	1353153	479219.09
			A9P3-C04-15^L	TAL D		
	4-16V	0"-6"	A9P3-C04-16^V	Archive	1353175.66	479206.78
	4-17	0"-6"	A9P3-C04-17^RMP	TAL A & B	1353138.17	479213.02
			A9P3-C04-17^L	TAL D		